STATEMENT OF BASIS

EAST CRAWLER PARK SITE SWMU 43
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
KENNEDY SPACE CENTER
BREVARD COUNTY, FLORIDA

PURPOSE OF STATEMENT OF BASIS

This Statement of Basis (SB) has been developed to inform and give the public an opportunity to comment on a proposed remedy to address contamination at the East Crawler Park Site (ECPS)[1]. A Kennedy Space Center (KSC) remediation team consisting of National Aeronautics and Space Administration (NASA), United States Environmental Protection Agency (EPA), and Florida Department of Environmental Protection (FDEP) has determined that the proposed remedy is cost effective and protective of human health and the environment. However, before implementing the proposed remedy, the KSC remediation team would like to give an opportunity for the public to comment on the proposed remedy. At any time during the public comment period, the public may comment as explained in the "How Do You Participate" section of this SB. After the end of the public comment period, the KSC remediation team will review all comments and issues raised in the comments and determine if there is a need to modify the proposed remedy before implementation.

WHY IS A REMEDY NEEDED?

The results of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) indicated that the polychlorinated biphenyls (PCBs) listed in Table 1 are present in the soil at the site, and could be potentially harmful to human health.

HOW DO YOU PARTICIPATE?

The Proposed Remedy

The proposed remedy for ECPS is:

- Implementation of institutional controls to prohibit residential exposure to soils.

The KSC remediation team solicits public review and comment on this SB before implementing the proposed remedy. The remedy for the ECPS will eventually be incorporated into the Hazardous and Solid Waste Amendments (HSWA) permit for the KSC. The public comment period for this SB and proposed remedy will begin on the date of publication for notice of availability of the SB in major local newspapers of general circulation, and end 45 days thereafter. If requested during the comment period, the KSC remediation team will hold a public meeting to respond to any oral comments or questions regarding the proposed remedy. To request a hearing or provide comments, contact the following person in writing within the 45-day comment period:

1. In accordance with RCRA ♣7004(b), this Statement of Basis summarizes the proposed remedy for NASA KSC East Crawler Park Site (ECPS). For detailed information on the site, consult the ECPS RFI and CMS reports, which are available for review at the information repository located at the NASA Document Library, North Brevard Library, 2121 South Hopkins Avenue, Titusville, FL 32780, telephone: (321) 264-5026.

Mr. Timothy J. Bahr, P.G.
FDEP – Bureau of Waste Cleanup
2600 Blair Stone Road, MS 4535
Tallahassee, FL 32399-2400

The HSWA Permit, SB, and associated administrative file, including the RFI Report, will be available to the public for viewing and copying at:

NASA Document Library
North Brevard Library
2121 South Hopkins Avenue
Titusville, FL 32780
Telephone: (321) 264-5026

To request further information, you may contact one of the following people:

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FACILITY DESCRIPTION

NASA established KSC as the primary launch site for the space program. These operations have involved the use of toxic and hazardous materials. Under the RCRA and applicable HSWA permit (Permit No. FL6800014585) issued by the FDEP and/or EPA, KSC was required to perform an investigation to determine the nature and extent of contamination from Solid Waste Management Unit (SWMU) No. 43, the ECPS (Figure 1).

SITE DESCRIPTION AND HISTORY

The ECPS is a NASA-operated facility located on the southeast side of KSC's crawlerway between NASA's Vehicle Assembly Building and the launch pads (Figure 1). The site is one of two parking areas for shuttle transport vehicles (crawlers) used to transport Space Shuttles from the Vehicle Assembly Building (VAB) to the complex launch pads. The roadway that the crawlers ride and park on is referred to as the crawlerway and is comprised of gravel to cobble-sized quartz river rock underlain by several feet of compacted limestone road-base material. Routine operation and maintenance of the crawlers takes place at the ECPS. Formerly, the site was used for parking the Mobile Service Structure (MSS) used during the Apollo Program Era. Based on the history of operations at the ECPS, suspected sources of contamination include lubricating grease and oil, and solvents that have been used during operation and maintenance of the crawlers and the former MSS.

The ECPS SWMU is about 350 by 700 feet with most of the site enclosed within a fenced area. Structures located within the fenced area include a former pumphouse

currently used for dry storage, an electrical interface building, a shed used to store petroleum, oil, and lubrucants (POL), a restroom, and an electrical "Switch Station 900" building (Figure 2).

Investigations conducted at the site include:

- November 1991 to March 1992: A Preliminary Soil Contamination Survey was performed that included sampling and analysis of soil, sediment, surface water and groundwater. Grease and oil, hydrocarbons and PCBs were detected at elevated concentrations in soil and sediment samples. Polynuclear aromatic hydrocarbons (PAHs) were also detected in sediment and volatile organic compounds (VOCs) were detected in groundwater.

- July 1992: A Stormwater Sampling and Analysis was completed. Lead and zinc were detected at concentrations exceeding FDEP surface water standards.

- June 1993: Soil Sampling at Switch Station 900 was completed prior to construction of the building around the station. PAHs were detected in one of the samples collected.

- 1996-1999: An RFI was conducted. Samples of surface and subsurface soil, sediment, surface water, and ground-water were collected and analyzed. Results of these analyses were used to determine potential increased human health and ecological risks. Unacceptable risks to potential human and ecological receptors were identified in the RFI for soil and sediment at the ECPS.

- 2001: Supplemental groundwater samples were collected to confirm the presence or absence of VOCs and aluminum. None of the analytes were detected above EPA/FDEP Groundwater Cleanup Target Levels (GCTLs, Chapter 62-777 F.A.C.)

SUMMARY OF SITE RISK

As part of the RFI activities, risk assessments were completed in accordance with KSC's Risk Assessment Decision Process document for KSC, Florida. A Human Health Risk Assessment (HHRA) was performed in accordance with EPA guidance (RAGS, EPA 1989 and subsequent EPA Region 4 Guidance). A Phase I ecological risk assessment (ERA) was performed in accordance with the EPA's "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments" dated 1997.

Chemicals of Concern (COCs) identified for human health risk during the RFI and supplemental sampling activities, that exceeded FDEP/EPA cleanup target levels were:

- Soil: PCBs and PAHs

The HHRA determined the estimated excess lifetime cancer risk for a hypothetical future child resident to be no greater than 7 in 10,000, which is above EPA's acceptable range of 1 in a million to 1 in 10,000 and FDEP's risk goal of 1 in a million. The main contaminants contributing to this cancer risk were PCBs in soil.

The ERA identified several constituents in soil, surface water and sediment that could potentially affect ecological receptors

exposed to these media. Also, surface water from the ditch that drains runoff from the ECPS discharges to the Banana River, an Outstanding Florida Waterway (OFW). Consequently, the KSC remediation team decided to implement interim corrective measures (ICM) as documented in the ECPS Corrective Measures Study (CMS).

Soil from within the fenced site and sediment from nearby ditches that direct surface water runoff from the site were excavated, properly disposed, and replaced with clean fill. Soil with PCBs detected at concentrations over industrial site cleanup target levels were removed. Soils with PAHs detected at concentrations over residential levels were included within the excavation area, and also removed. Soil with PCBs detected at concentrations over residential use cleanup target levels were not removed because the past, current, and projected future land use of the ECPS is industrial in nature, and site rehabilitation goals were established based on the risk and potential for exposure in an industrial setting. Therefore land use controls are required to prohibit residential exposure to contaminated soils.

Media removal activities made ecological exposure pathways to the perimeter ditch system incomplete, and minimized exposure pathways to soil contamination. In addition to remediating soil and sediment, the IM served to reduce the potential for surface water recontamination by removing the source of contaminants. No chemicals of concern were identified in surface water based upon the results of Step 3 of EPA's 8-Step ERA process.

WHAT ARE THE REMEDY OBJECTIVES?

The remedy is to protect humans from exposure to soil contaminants that exceed FDEP/EPA residential-use cleanup target levels by limiting site access only to industrial workers. Table 1 lists the COCs present at the ECPS. The first column lists the chemical name, the second column lists the range of concentrations detected in the soil at ECPS following ICMs, and the last column presents the EPA/FDEP cleanup target level.

Table 1

Site-Related Chemicals of Concern (COCs)	Range of Detections	Cleanup Target Level[1]
Soil (mg/kg)		
PCBs[2]	0.015 to 2.1	0.5/2.1

1 Florida Administrative Code 62-777 for residential/industrial use exposure.
2 Polychlorinated biphenyls.

REMEDIAL ALTERNATIVES FOR THE ECPS

Remedial alternatives are different combinations of plans or technologies to restrict access, and to contain or treat contamination to protect human health and the environment. Because of the very limited nature of the soil contamination following ICMs, only one alternative was considered for the ECPS and is summarized below.

- Land Use Controls

Land Use Controls:
Institutional land use controls would be implemented to limit access to site soils by individuals other than industrial workers. NASA, EPA, and the FDEP have entered into a Memorandum of Agreement (MOA) that outlines how institutional controls will

be managed at NASA[2]. Controls will include periodic inspection, condition certification and agency notification. The soil use control area is shown on Figure 2.

EVALUATION OF REMEDY

The remedy was evaluated to determine if it will comply with EPA's four threshold, and five balancing criteria for corrective measures. The four threshold criteria are:

- overall protection of human health and the environment;
- attain media cleanup standards;
- control the sources of releases; and,
- comply with standards for management of wastes.

The five balancing criteria are:

- long term reliability and effectiveness;
- reduction in the toxicity, mobility, or volume of wastes;
- short term effectiveness;
- implementability; and
- cost.

Land Use Controls meets the threshold criteria and were determined to be the best overall approach with respect to the balancing criteria.

WHAT IMPACTS WOULD THE REMEDY HAVE ON THE LOCAL COMMUNITY?

There would be no impacts to the local community because administrative actions to limit the access to the site are consistent with current operating procedures.

WHY DOES THE KSC REMEDIATION TEAM RECOMMEND THIS REMEDY?

The team recommends the proposed remedy because it is an effective way to prevent exposure to contaminants. The proposed remedy meets the threshold and balancing criteria for corrective measures.

NEXT STEPS

The KSC Remediation Team will review all comments on this SB to determine if the proposed remedy needs modification prior to implementation and prior to incorporating the proposed remedy to KSC's HSWA permit. If the proposed remedy is determined to be appropriate for implementation, then a Land Use Control Implementation Plan will be developed to incorporate the institutional controls.

2. By separate MOA effective February 23, 2001, with the EPA and FDEP, KSC, on behalf of NASA, agreed to implement Center-wide, certain periodic site inspection, condition certification and agency notification procedures designed to ensure the maintenance by Center personnel of any site-specific LUCs deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of that agreement was that through the Center's substantial good faith compliance with the procedures called for herein, reasonable assurances would be provided to EPA and FDEP as to the permanency of those remedies which included the use of specific LUCs.

Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by NASA KSC, EPA and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent upon the Center's substantial good faith compliance with the specific LUC maintenance commitments reflected herein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy concurred in may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection of human health and the environment.